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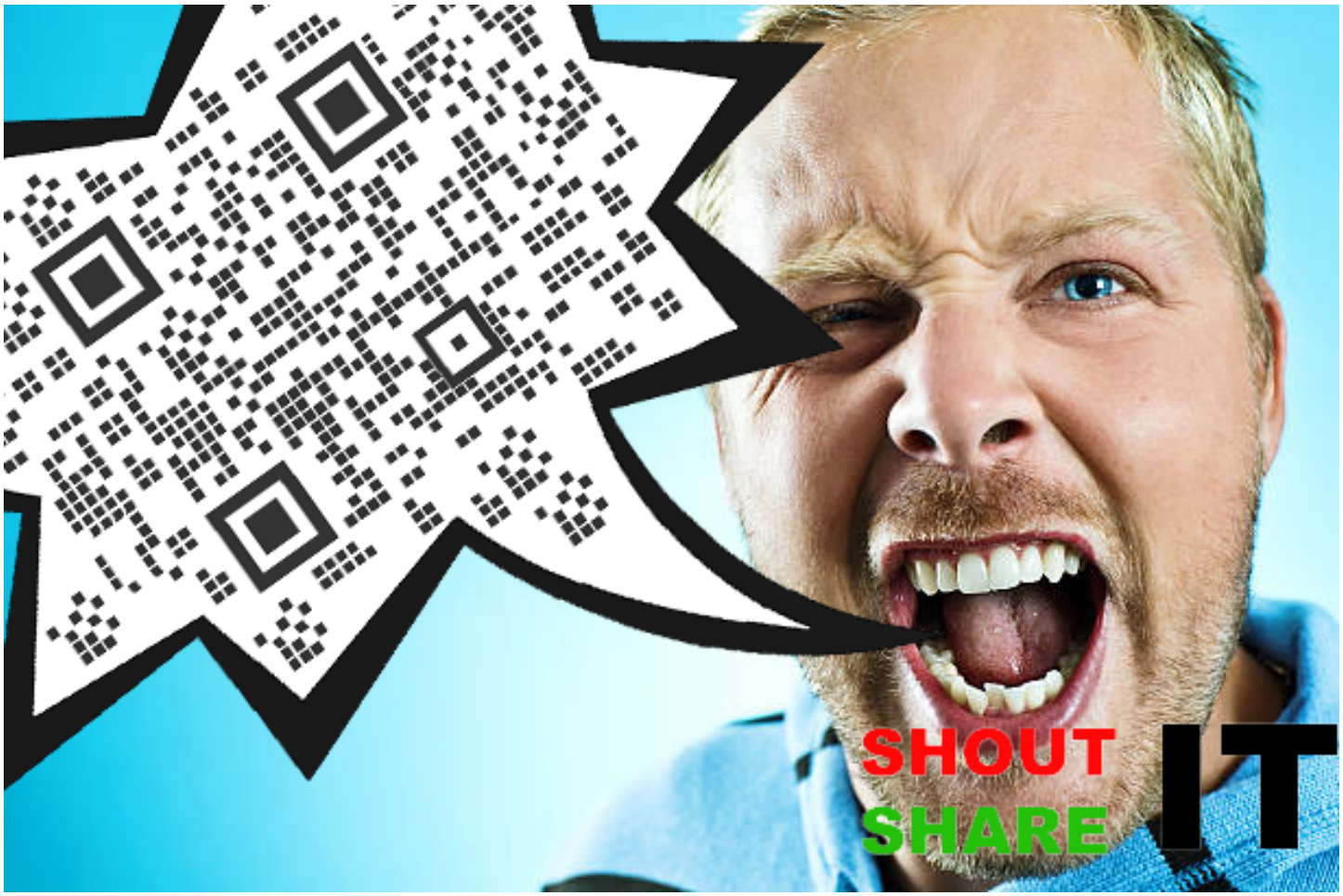
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UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 638

Contribution from the Forest Service
HENRY S. GRAVES, Forester

Washington, D. C. ▼ April 8, 1918

FORESTRY AND COMMUNITY DEVELOPMENT

By

SAMUEL T. DANA, Assistant Chief of Forest Investigations

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FOREST SERVICE.

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Nov 18. 1935

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TOO LITTLE ATTENTION PAID TO SOME EFFECTS OF FOREST DEVASTATION.

Nowadays the more obvious results of forest devastation, such as fires, increase in soil erosion, and irregularity of stream flow, are pretty generally recognized. But so far comparatively little attention has been paid to certain economic and social effects of forest devastation, perhaps less apparent but scarcely less harmful. These are at once an indictment of the system that has made them possible and a challenge to devise a better one.

In a very literal sense our civilization has been built on wood. From the forests that once stretched almost unbroken from Maine to Florida, from the immense timber stands of the Lake States, and from those of the Rocky Mountains and Pacific coast has come, in turn, the material needed for the development of farms and the building of homes as settlement pushed ever westward. Unquestionably, the remarkable progress of agriculture has been made possible in large measure by an easily accessible supply of timber.

And along with the material for agricultural development the forests have given us also one of the greatest of our basic manufacturing industries. Of the 14 groups of industries recognized by the last census, the lumber industry stands third in number of wage earners and fourth in value of product. In its allied branches of logging, milling, and manufacture it employs 907,000 persons, or 13.7 per cent of all the wage earners in the country. The value of its annual

output of lumber and remanufactured products amounts to $1,582,000,000. From the crude mills and moderate cuts of early days has come the modern mill of enormous capacity and elaborate equipment. To-day the lumber industry produces an annual cut of some hundred billion board feet of wood, furnishes a means of support for several millions of people, and in hundreds of ways is closely interwoven in the fabric of our economic life.

But there is another side to the picture. Too often has forest utilization been synonymous with forest destruction. Our forests, for the most part, have been used not as a crop, a renewable resource, but as a mine, which could yield its wealth but once and then must be abandoned. In many places when the forest "mine" became exhausted, the civilization and prosperity that forest exploitation brought about declined and disappeared. Other evils, inseparable from the system, also have followed in the wake of destructive lumbering. To point out some of the harmful economic and social effects and to suggest a remedy is the object of this bulletin. Before doing so, however, the reason for the destructiveness of ordinary lumbering operations in the United States will be touched upon briefly, since this offers a clue to the solution of the problem.

WHY OUR FORESTS HAVE BEEN DEVASTATED.

The chief reason why forest destruction rather than forest conservation has held sway in the United States is clearly the individualistic economic system under which the natural resources of the country have been utilized. The theory has been that individual initiative and self-interest, stimulated by the desire for pecuniary gain, could be trusted to secure the quickest and most nearly complete utilization of these resources, and that in the long run private ownership and development would result in the greatest good to the entire community. In line with this idea both the Federal and State Governments, until a comparatively few years ago, almost uniformly followed the policy of disposing of their forest lands as rapidly as possible. Enormous areas were sold, generally for a fraction of their real value, given away as railroad, highway, or other grants, and acquired—often for "homestead" purposes—under the various public-land laws. Within the last century several hundred million acres of forest lands in the United States have passed from public to private ownership.

Complete control over the bulk of the forests in the country has been turned over to thousands of private owners, each of whom has followed his own individual interest in handling his property. There has been no uniformity either in point of view or in practice. Some owners have cut conservatively, others recklessly, and still

others not at all. Probably the one idea which most owners have had in common was to adopt whatever course appeared to be the most profitable financially. Ordinarily, under the prevailing economic conditions, this meant cutting with entire disregard for the future. Enormous stands of apparently inexhaustible virgin timber were available, stumpage prices were low, and competition was keen. As a result the average lumberman was forced to conduct his business in the cheapest possible manner and very naturally felt no inclination to incur the additional expense necessary to secure closer utilization of timber, to provide for reforestation, or even to insure fire protection. This does not mean that the lumberman had less regard than other men for the needs of the future and for the rights of generations yet unborn, but merely that he was acting, in accordance with the necessities imposed by the accepted system, as his individual interests dictated.

The net result has been that in the handling of our forest resources forestry has been conspicuous by its absence. Little attempt has been made to keep forest land productive, and still less to secure a continuous yield of wood. Speculation in timber has been rife almost from the very beginning. Stumpage has been acquired for little or nothing, and profits in the lumber industry have been derived very generally from this source rather than from the logging and milling end of the business. Comparatively little thought has been given to the future, which has been left to take care of itself.

In the discussion that follows there is no desire to minimize the rôle that the lumber industry has played in opening up undeveloped regions and creating national wealth. It is not lumbering, but destructive lumbering, that calls for a remedy. And the responsibility for destructive lumbering rests not with any individual or group of individuals, but with an economic system that tends to hinder rather than to help permanent community development.

NEGLECTED EVILS OF DESTRUCTIVE LUMBERING.

A ROVING LUMBER INDUSTRY.

One of the most obvious economic effects of treating the forest as a mine rather than as a crop has been to make lumbering in the United States a roving industry, moving from one region to another as the timber resources of each in turn have been depleted. Not only have the States consisting chiefly of agricultural land, such as Ohio and Indiana, been largely cut out, but also those with large areas of land primarily valuable for forest production. New York State, for example, which in 1850 stood first in the amount of lumber produced, is now twenty-fourth. Pennsylvania, which was first in 1860, now stands eighteenth. Michigan, which held first place from

1870 to 1890, is now thirteenth. Wisconsin, which headed the list from 1900 to 1904, has now dropped to tenth place.

And so the lumber industry has migrated from one region to another as the center of production has shifted from the Northeast to the Lake States and then to the South, and is now shifting to the Pacific Northwest. This movement has been due in part to the normal clearing of land for agriculture and to the opening up and development of hitherto comparatively unsettled and inaccessible regions richly endowed with timber resources, but in part also to the fact that on most of the cut-over areas no steps were taken to secure a second crop to form the basis of another cut, and still less to provide for continuous forest production. The land to a large extent has been rendered unproductive, towns and farms have been abandoned, timber supplies have been depleted, transportation facilities have been crippled, and the community generally has been rendered poorer and less independent.

From a social standpoint one of the most significant phases of this lack of permanence in the lumber industry has been the influence that it has exerted on the movement of population and on the prosperity of cities and towns. Only in those regions where agricultural lands strongly predominate have cities originally built up by the lumber industry succeeded in maintaining an uninterrupted growth and prosperity as the lumber was cut out. Many cities less favorably situated with respect to agricultural lands have also succeeded in maintaining their existence as the timber has gone by the introduction of other industries, but often only after a more or less prolonged period of depression, and in any event with less prospect of attaining the development that would have been possible if the forest land tributary to them had been kept productive.

ABANDONED TOWNS.

But the effects of forest devastation on community development are seen most clearly in the smaller towns in the regions primarily adapted to timber production. Here deserted villages are signposts that too often mark the trail of lumbering operations. As in the mining regions of the West, towns spring up almost overnight, flourish for a few years until the adjacent timber is cut out, and then sink rapidly to inactivity or even complete extinction. Unlike mining towns, however, there is not the same necessity for their disappearance. Timber is a renewable resource, which can be so handled as to insure continuity of cut and therefore of industry.

In the mountain counties of Pennsylvania, particularly in the northern part of the State, one comes upon town after town that has declined with the passing of the forest. Run down and deserted houses still standing give an idea of the towns' former prosperity.

Six and eight room frame houses with up to half an acre of land can be bought for from $200 to $400.

Most striking of all, perhaps, is the rise and fall of Cross Fork, in the hills of southeastern Potter County. In the fall of 1893, before lumbering operations started, perhaps five or six families were living on the site where two years later stood a busy town. For some 14 years Cross Fork led a feverish existence while the forest wealth was stripped from the surrounding hills. The life of the town was, of course, the big sawmill, which had a daily capacity of 230,000 board feet and was up to date in every respect. In 1897 a stave mill was established also, and various other minor wood-using industries existed at different times. In its prime Cross Fork had a population of 2,000 or more and was generally known as one of the liveliest, most hustling places in the State. A branch line of the Buffalo and Susquehanna Railroad was built to the town. Stores of all kinds flourished. There were seven hotels, four churches, a Y. M. C. A. with baths and gymnasium, a large, up-to-date high school, two systems of waterworks, and two electric light systems.

But the prosperity of the town was as short-lived as the timber supply. In the spring of 1909 the big sawmill shut down for good. From then on the population dwindled rapidly. Fires became so frequent that the insurance companies canceled their policies. Five-room frame houses with bath were offered for sale for from $25 to $35 without finding a buyer. In the winter of 1912–13 the stave mill also ceased operations, and the next fall railroad service, which for sometime had been limited to three trains a week, stopped altogether. To-day the total population consists of but 60 persons. It if had not been for the State, which bought up the cut-over lands and has undertaken in earnest the work of reconstruction, the town would be as desolate as the surrounding hills. As it is, Cross Fork is now a quiet little hamlet, the merest shadow of its former self and without hope for an industrial and useful future until the timber grows again.

The cut-over lands of the Lake States tell the same story of temporary prosperity characterized by the rise and fall of mushroom towns. Immense tracts of little value for anything except timber production have been left dotted with deserted villages as the lumber industry devasted them and swept on. Meredith, for example, was once a prosperous town in the northeastern corner or Clare County, Mich., for which one looks in vain on any modern map. To-day its hotels are in ruins, the town hall has been moved elsewhere, the railroad which connected it with the outside world has been torn up, and its population has dwindled from 500 to 3.

In Oscoda County, Mich., the town of McKinley has met a similar fate. Unlike many other woods towns it never had a large sawmill, but was rather a distributing center for the surrounding region. It had railroad and machine shops, a small sawmill and a shingle mill cutting material for local use, and served as headquarters for adjacent lumbering operations. The usual assortment of schools, churches, stores, hotels, and saloons met the needs of the 500 or more people in the town itself, to say nothing of the 2,500 lumberjacks in the surrounding woods. To-day the town is nothing but a memory. A few deserted houses, the foundations of the old shops, and a population of three, one of whom is a county pauper, are all that is left of its former activity. Its prosperity departed with the forests that gave it birth.

Farther west, in Wisconsin, the same trail of deserted villages has been left in the wake of the lumber industry. If it were not for the summer tourists who, in spite of the desolation of the cut-over lands, are attracted to the region by the beauty of its lakes the decline of many of the towns would be still more marked. Throughout the region desolation and decay have followed the prosperity that lasted only as long as the timber.

DESERTED FARMS.

In some regions the practice of timber "mining" has actually tended to cause the abandonment of farms as well as of towns. Nearly everywhere the fullest use of the natural resources of the country demands that both forestry and agriculture be practiced, each in its appropriate place, since most regions contain both farm land and forest land, although of course in widely varying proportions. Even in the best farming districts there are usually certain areas that should be devoted to woodlots, and patches suitable for cultivation are found in regions composed mainly of absolute forest land. Where the cultivable land is rather scattered, of only medium quality, or at some distance from a satisfactory market, it is often necessary for the region to have some other industry in order to make farming practicable. Profitable returns can not be secured from the farm alone. In such regions permanent wood-using industries afford additional opportunities for the farmer to secure employment. They not only help to tide him over the difficult period when he is clearing his land and getting a start, but they also furnish an extra source of income after he has become well established. Moreover, the presence of a population permanently employed in the wood-using industries creates a strong local market for farm products. This often enables the farmer to dispose profitably of material that could not be shipped to a more distant market. Additional industries also help to secure

better transportation facilities. Not infrequently these various factors, either singly or in combination, are just enough to make the difference between success and failure for the individual farmer. Certain it is that where large areas of forest lands are interspersed with smaller areas potentially valuable for agriculture, the management of the forest lands on the basis of a sustained annual yield may be absolutely necessary for the development of the agricultural lands, and in any event will make their utilization more profitable.

Unfortunately, forest exploitation in the past has been such as to make this ideal conspicuous by its absence. Under the individualistic economic system of the past there has been an irresistible pressure on the majority of private owners to cut clear and then abandon their land. The result has been lack of permanence not only in wood-using industries but in many regions in farming also. However desirable the clearing of the forest may have been in regions chiefly valuable for cultivation, in regions where forest lands predominate it has in the long run hindered rather than helped agriculture.

In Pennsylvania, for example, during the decade from 1900 to 1910, a period of rising prices for farm products, the number of farms decreased nearly 5,000. At the same time the area of land in farms decreased more than 780,000 acres, and the area of improved land in farms more than 530,000 acres. While the total population of the State was increasing 21.6 per cent, the number of farms decreased 2.2 per cent and the acreage of total farm land 4.1 per cent. The lure of the city and the development of better lands elsewhere may partially explain these facts. It is significant, however, that deserted farms are a common sight in the once timbered mountains, and that their abandonment has followed the departure of the lumber industry. With the passing of the local market and the opportunities for outside employment, their owners found farming a precarious business.

It is entirely possible, furthermore, to go to an extreme in the deforestation of all lands that are suitable for agriculture and that eventually should be cleared and cultivated. There is no advantage in removing the forests and abandoning such lands before they actually can be put to use. Under present conditions, however, this course is by no means uncommon. In Wisconsin, for instance, the State Agricultural College estimates that there are now 10,000,000 acres of cut-over lands, of which three-fourths may be agricultural. At the present rate of improvement, however—50,000 acres annually—it will be 150 years before this entire area is brought under cultivation. In other words, if the land had been maintained in forest it would be possible to raise from one to three timber crops on

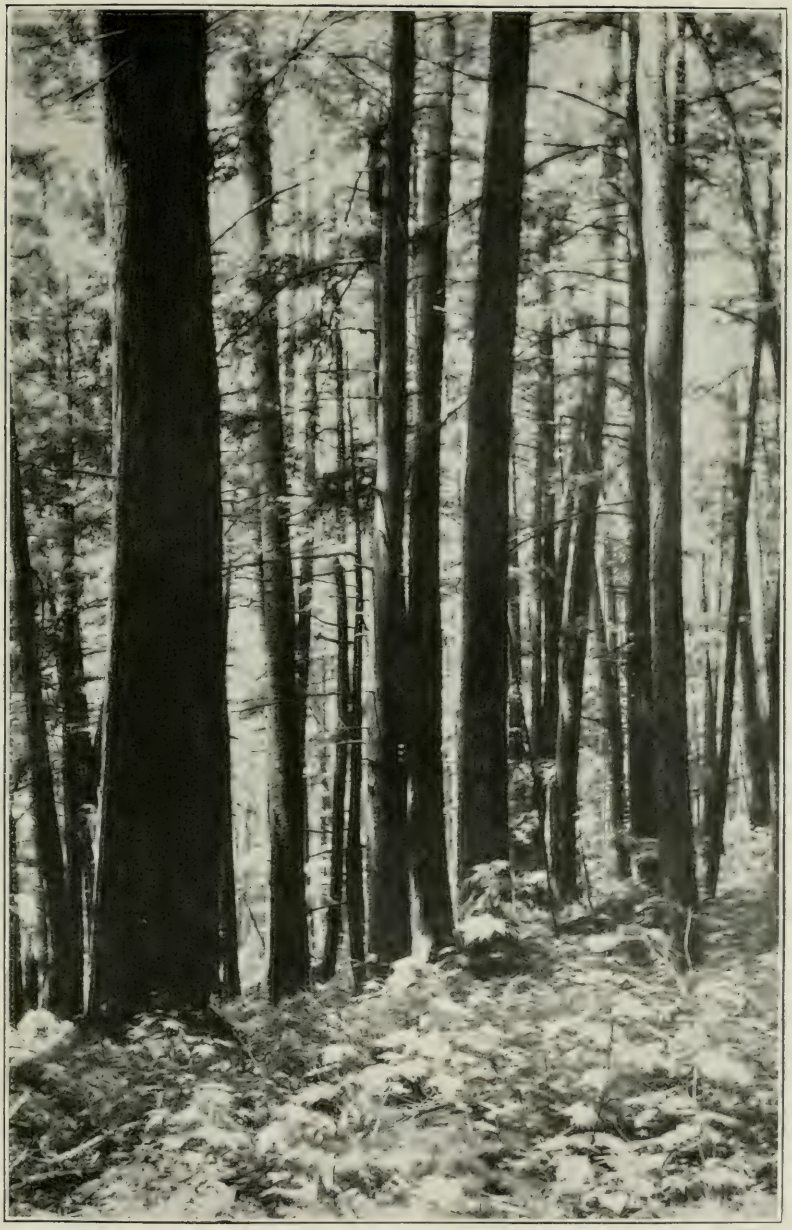
it before it could be utilized fully for agriculture. If forestry had been practiced on only three-fourths of this 10,000,000 acres, and if the annual growth had been only 300 board feet per acre, there would be an annual production of 2¼ billion board feet annually. This is almost exactly twice the present lumber cut of the State. The production of this amount of material would support a good-sized population, stimulate business, provide a market for local agricultural products, and offer employment to the settler during slack times on the farm. Clearly nothing has been gained and much has been lost by abandoning forest production on the land before the time for its cultivation was ripe.

There are large areas that once were used for farms, justifiably perhaps, but that under present conditions should be used for the production of timber crops. In New England and New York, for example, thousands of acres that were cultivated before the opening up of the more fertile lands farther west are now properly being allowed to revert to forest. This conversion is being permitted for the most part to take place in a haphazard fashion, and consequently is proceeding all too slowly and irregularly. Proper care of these areas would help greatly to increase their productiveness.

A somewhat similar situation exists in northern Georgia, where approximately 10 per cent of the mountainous land now being acquired by the Government for National Forest purposes consists of abandoned farm lands. Practically the entire farming community that had settled there moved out in a body to raise cotton on the level, sandy lands of the coastal plain. In nearly all parts of the country are tracts that formerly were settled, cultivated for a while, and then abandoned either because the land was inherently unsuitable for permanent farming or because more valuable lands elsewhere became available for settlement. As a general rule, there is more danger that attempts will be made to cultivate land better suited for timber crops than that really good agricultural land will be retained in forest.

LOCAL SHORTAGES OF TIMBER.

Thanks to the successive opening up of fresh sources of supply as the lumber industry has moved south and west, the United States has not yet experienced a general shortage of timber. Sufficient wood still is cut each year to meet the needs of the country. This is being done, however, at the expense of the forest capital, and is possible only because the country has been so fortunate as to have available for immediate use the accumulation of many centuries of forest growth. The best available estimates indicate that for many years the annual cut of wood products of all kinds has greatly



F-23139A

A VIRGIN FOREST OF HEMLOCK AND WHITE PINE IN WESTERN PENNSYLVANIA.

Stands of this kind are now rare and in their place are denuded, fire-swept areas.

F-23134A

FIG. 1.—CUT-OVER AND BURNED-OVER LAND IN NORTHERN PENNSYLVANIA.

This area was formerly covered with a heavy stand of conifers similar to that shown in Plate I. Forests of this sort were the source of busy, prosperous communities while the timber was being cut. The region is now practically deserted and the area covered with worthless fire cherry, aspen, and sweet fern.

F-23156A

FIG. 2.—HOW PENNSYLVANIA IS BUILDING UP FOREST COMMUNITIES.

Many of the devastated lands are now the property of the State, which is attempting to reforest them and to build up permanent forest communities. At Pine Grove Furnace, in the heart of one of the State forests, all of the buildings in the town as well as the surrounding forest lands are owned by the State. The building shown in the picture has been repaired and improved, and is now rented for use as a hotel.

F-24319A

FIG. 1.—AN AREA CLEAR CUT FOR CHARCOAL FOR THE LEADVILLE, COLO., MINES.
Note high stumps, lack of reproduction, and erosion in right foreground.

F-23149A

FIG. 2.—A HILLSIDE CLEAR CUT FOR ACID WOOD IN NORTHERN PENNSYLVANIA.
The ruts down which the logs are dragged afford excellent opportunity for the starting of erosion.

F–23119A

FIG. 1.—GENERAL VIEW OF A PENNSYLVANIA TOWN, THE POPULATION OF WHICH FOR MANY YEARS WAS ABOUT 600, BUT IS NOW ONLY 40.

The tannery, on which the prosperity of the town depended, is shown at the right of the picture.

F–23117A

FIG. 2.—ANOTHER VIEW OF THE TANNERY, SHOWING MORE CLEARLY THE NUMBER OF DWELLINGS BY WHICH IT WAS SURROUNDED.

All of these buildings, like many others in the town, are now abandoned. Property values have depreciated materially with the departure of the forests.

exceeded the annual growth. Obviously, such a program can not be continued indefinitely. A few more decades will probably witness the exhaustion of the bulk of the virgin forests of the country except in the more inaccessible portions of the western States.

In the meantime in many parts of the country local shortages in standing timber have already occurred, with the consequent necessity of importing lumber from a distance and at correspondingly higher prices. Many regions which once were blessed with "inexhaustible" forest resources and from which vast quantities of lumber have been shipped now have to depend on other parts of the country for the bulk of their timber. Muskegon, Mich., formerly one of the largest sawmill towns in the world, offers a good example of this. In 1887 the sawmills of the town had a cut of more than 665,000,000 feet of lumber and 520,000,000 shingles; and it is estimated that the entire output of the forests tributary to the Muskegon River has exceeded 25 billion board feet. To-day lumbering operations have practically ceased. One small mill cuts some 3 or 4 million feet a year of inferior material picked up here and there along the shore of the lake. What lumber is used comes mainly from the South and from Wisconsin and Minnesota.

Depletion of local supplies has resulted very naturally in more or less marked increases in the prices of wood products in general. In spite of the fact that cheap stumpage has been available in other parts of the country, transportation charges have added materially to the cost of the lumber at the point of consumption. In the Middle West, for example, 20 per cent or more of the present retail price of lumber represents freight charges. Western lumber paying freights of from $10 to $18 per thousand board feet is a considerable factor in the supply of the East. Obviously, if the center of lumber production is to be located thousands of miles from the center of population, retail prices are bound to rise and the consumer must either pay the bill or go without.

The possibility of supplementing our own depleted forest resources from abroad has often been suggested optimistically but all too vaguely. Careful studies of foreign sources of supply seem to indicate that too much reliance should not be placed on this hope. Surplus supplies of timber still exist in Russia, Finland, and Sweden, but the growing demands of other European countries are almost certain to render comparatively little of this available for use in the United States. The forest resources of Central and South America are still to a large extent unknown, but it is very doubtful whether they can be counted on to supply us with any considerable amount of timber suitable for ordinary construction purposes. Canada still has a surplus, but this, too, is being rapidly depleted, and it is reason-

able to suppose that in the not distant future practically the entire production of its forests will be needed for home consumption by the constantly increasing population. Importations from any of these sources, moreover, involve considerable charges for transportation, with a corresponding increase in price to the consumer.

It seems certain that in the long run the United States must rely on its own resources to supply its needs for lumber, ties, paper, and other wood products, as well as for naval stores and wood distillation products. It is equally certain, furthermore, that these supplies should be produced as near the point of consumption as possible through the full use of forest land wherever it occurs. Too little attention has so far been paid to these fundamental truths. As a result, lumber prices have increased in the cut-over regions, and the pinch of inadequate supplies has already been felt in many localities.

SPECULATION.

IN STANDING TIMBER.

Speculation, both in standing timber and in cut-over lands, is another serious evil that has attended the exploitation of the forests. The subject is so big a one, however, as to make it impossible in a bulletin such as this to do more than touch briefly on a few of its more important aspects.

Large bodies of mature timber have been acquired with no intention of utilizing them immediately, but with the idea of trading them off as soon as possible at a substantial profit or of holding them for a rise in price. As transportation facilities have been developed and the country built up, there naturally has been a rapid rise in stumpage values, particularly in the newer sections. In parts of the Northwest, for example, the original price at which timber was acquired from the Government has been multiplied in subsequent transfers anywhere from ten to twenty times within the short space of ten or fifteen years. Millions of acres of the finest timberlands in the country passed every year from public to private ownership; hundreds of fortunes were made merely by buying and selling stumpage; and the entire tendency was to promote timber speculation at the expense of timber production. In a general way, although perhaps not in such acute form, this has been the history of timber ownership throughout the country. In fact, so rapidly have forest properties, originally acquired at little or no expense, increased in value that the lumber industry as a whole has looked for its profits to timber ownership rather than to logging and milling—that is, to the speculative rather than to the operative end of the business. Only too frequently have speculative returns concealed actual losses resulting from inefficiency of operation.

It has often been claimed that the incentive to make money by speculation has been one of the important factors in bringing about the development of many parts of the country, and particularly of the Western States. To what extent this is true depends on whether speculation is defined as a business venture involving considerable risk and therefore demanding a high interest return, or merely as an investment entailing no productive operations and depending for its profit on an expected increase in value. In the former sense, speculation undoubtedly has done much to open up previously unsettled portions of the country. In the latter sense, this may also be true of speculation in standing timber so far as such speculation has led to actual production as a means of realizing on the investment. Furthermore, it is obvious that the taxes paid by private owners of timberland, whether speculators or not, have aided materially in supporting local community improvements and governments. On the other hand, it may be open to question whether the development stimulated in these ways was always a normal and healthy one.

In many parts of the country, but particularly in the South and West, timber owners to-day find themselves in the position of having an overload of stumpage. Urged on by the belief that stumpage values were bound to rise indefinitely and that speculative profits are an inevitable consequence of timber ownership, they acquired enormous areas of forest lands, far in excess of the present needs of the industry. Contrary to expectation, these now have become a burden instead of an asset. Carrying charges, such as interest on the investment, taxation, and fire protection, in many cases are mounting up faster than the stumpage is increasing in value.

In California and the Pacific Northwest, for example, the capitalized value of privately owned timberlands is estimated at approximately $1,100,000,000. Much of this is bonded, and on all of it carrying charges are heavy, while in recent years stumpage values have risen little or not at all. Consequently, all except the strongest owners have been forced to cut, irrespective of the demand, in order to meet current expenses and to retire their investment. In times of depressed market conditions the natural result of this has been to bring about a greater cut than the market can absorb at prevailing prices, with consequent failure of the weaker owners and general instability of the lumber industry.

From the standpoint of the manufacturer, overproduction begins when lumber prices do not return the cost of production plus a living profit. Curiously enough, this condition sometimes has accompanied a decrease in the total lumber cut. The explanation of this paradox lies in the fact that a decreasing demand for lumber, which is of course particularly marked in periods of general depression, means lower prices. In other words, the decreased demand that always ac-

companies poor markets may be more than sufficient to offset even a considerable decrease in supply. This was the case in western Washington in 1915, when overproduction was very marked in spite of a lumber production approximately 13 per cent less than that of 1913. In addition to the losses to manufacturers brought about by such a condition, this reduced cut probably meant a decrease of from $7,000,000 to $8,000,000 in wages paid to laborers, to say nothing of correspondingly decreased expenditures for supplies and equipment. Moreover, logging at such times is accompanied by a waste of much material in the woods, since depressed market conditions make it unprofitable to harvest the lower grades and inferior species. From the standpoint of the public, overproduction caused by timber speculation means the premature and wasteful exploitation of an essential resource, decreased opportunities for the employment of labor and investment of capital, and hard times generally for individuals and industries dependent on lumbering.

IN CUT-OVER LANDS.

Tying up agricultural lands.—Perhaps even more important from a social standpoint than the holding of mature timber is speculation in cut-over lands. This does not mean that such speculation has been universal. On the contrary, many owners, actuated by real public spirit, have attempted to secure the settlement of their cut-over lands under the right conditions or to hold them for future forest production. In spite of such instances, however, speculation in cut-over lands has been much too frequent, and has acted in two opposite directions: to prevent the development of good agricultural lands, and to encourage the settlement of nonagricultural lands. Whether such lands are put on or kept off the market depends entirely on the speculator, who naturally follows whichever course apparently will be most profitable for him, irrespective of its effect on the individual settler or on the community.

In the case of lands which are really suitable for agriculture, the tendency is for the speculator to hold them out of use in order to secure the benefit of the rise in land values that is sure to follow increase of population. This is done more often by offering the lands for sale at a price in excess of their true present value than by refusal to sell at any price. Examples of this practice, which generally is looked upon as "good business," are so common as scarcely to excite comment. A single illustration of how it works out in actual practice will therefore suffice.

In western Washington some 700,000 acres were eliminated from the Olympic National Forest in 1900 and in 1901 for the ostensible reason that the area was good agricultural land and that its reten-

tion under public ownership blocked development. The usual course of events then took place. The bulk of the land, which was for the most part heavily timbered, was at once taken up under the different land laws by "homesteaders," who immediately proceeded to dispose of it to various timber companies. Considerable areas were cut over by these companies, while other portions were held for speculation. Most of the cut-over lands have passed into the hands of land companies; a very small portion into the hands of bona fide settlers. Forty dollars and over per acre is asked for tracts that will require at least $150 more per acre to clear. Fifteen years after the elimination of the area from the National Forest only some 600 acres out of the 700,000 had been put under cultivation. Timberland worth $30,000,000 has passed from public to private ownership, and the development of the bulk of the area that is fitted for agriculture has been postponed indefinitely.

It is estimated that on the west coast of Washington and Oregon there are now some 4,000,000 acres of cut-over Douglas fir lands, and that this area is being added to at the rate of about 150,000 acres a year. Although a large part of this area consists of good agricultural soil, only a comparatively small portion of it has been put under cultivation, and the agricultural development of the region is proceeding much more slowly than its resources warrant. This is due in part to the high cost of clearing the land of stumps and logging débris, to lack of transportation facilities, and to distance from market. But all these difficulties are intensified by the speculative value placed upon the land, which often adds just enough burden to make its cultivation unprofitable and so to keep it out of use.

Selling sand barrens and swamps for farms.—In the case of non-agricultural cut-over lands there is little or no promise of a speculative rise in value, and the speculator usually disposes of them as rapidly as possible. Misrepresentation very often plays an important part in this. Dreary, sterile sand barrens and water-soaked swamps are pictured as fertile, wonderfully productive farm lands, as extraordinarily fine grazing grounds, or as the most delightful locations for summer resorts. Naturally, it is those who know least about such things who are ensnared most easily. Clerks, stenographers, mill hands, day laborers, and others from the city, who would have difficulty in making a living off the most fertile farm in the country, not infrequently invest all they have in the hope of being able to establish themselves independently on a piece of land of their very own. In such cases it is only a few years before inevitable failure forces them to abandon the land and return to their tasks with just a little less confidence in themselves, a little less hope for the future, and a great deal less faith in the honesty of their fellow man.

The sand plains of Michigan and Wisconsin are dotted with decaying dwellings and abandoned fields that tell the tale of the speculator in cut-over lands and his victims. Practically all these areas, which originaly were covered with timber, were at one time the property of the State. Gradually, however, the bulk of them passed into the hands of private owners who proceeded to strip them of their timber. The cut-over lands were then sold to the so-called development companies or allowed to revert to the State for taxes. Large areas of these delinquent tax lands also fell into the hands of speculators through subsequent sale by the State. What happened to them can best be made clear by citing a few instances.

In Michigan, for example, until a few years ago the practice was for the State to sell, at an average price of approximately $1 an acre, lands that had reverted to it through the nonpayment of taxes. A large proportion of these lands was acquired by speculators, many of whom were not even residents of the State, and who proceeded to use them as a means for exploiting the more credulous portion of the general public. It has been estimated officially that less than 5 per cent of the lands disposed of in this way were sold to actual settlers.

The land sharks naturally proceeded to realize on their investment as soon and as handsomely as possible. One lot of lands purchased from the State for an average of 86 cents an acre was sold for $12 per acre, a profit of about 1,300 per cent. Still greater profits sometimes were made by the shrewd scheme of dividing the land into summer-resort lots consisting of from one-tenth to one-fourth acre, and selling these for from $10 to $15 a lot. Practially all these sales were made through misrepresentation. Full-page advertisements in the Chicago and Detroit papers and attractively illustrated pamphlets contained such statements as the following:

> We have a glorious climate, the best water on earth, and easily cleared land which produces as much money per acre as any in the United States or Canada. Come and be one of us.

> Roscommon County will grow more and better wheat, oats, rye, speltz, timothy hay, clover seed, beans, field peas, potatoes, cabbages, sugar beets, turnips, and rutabagas to the acre than any other county in the State, or in Illinois, Indiana, or Ohio.

Lands with such wonderful possibilities as these were to be had from the development companies for the nominal sum of $6 and up per acre. To some extent they were bought as an investment, usualiy by city dwellers of small means, in anticipation of the rapid rise in value that surely would take place in lands so full of promise. Considerable areas, however, were bought by bona fide settlers. One land company stated that during the period from 1901 to 1907 more land in Roscommon and Crawford Counties was sold to active

farmers than in all the rest of the State together. These prospective settlers included both actual farmers who were attracted by the cheap price and ease of clearing, and clerks, stenographers, and other city workers who had no real knowledge of agriculture but were dazzled by the prospect of an easy and independent life. Needless to say, their expectations were not realized. As one of the State forest wardens expressed it:

> A man will have more fun for his money by throwing it in the lake and seeing the splash. When these poor fellows from the cities buy a section of this land they expect to be able to grow something upon it. The result is that they eke out a miserable existence for a year or so, and then abandon the farm and are glad to get back to the city, where the pay envelope is handed out each Saturday night.

This does not mean that the entire region is nonagricultural; portions of it contain good land where farming is profitable. It does mean, however, that the lands which have reverted to the State for taxes and which form the principal stock in trade of the land companies have been classified naturally by a gradual culling process as the poorest in the region. They are chiefly light sands of the type concerning which one of the old-timers once said:

> Of course you can farm those lands. All you need is two things—a shower of rain every week day and a shower of fertilizer on Sunday.

Not having sufficient control over the elements to bring about such a desirable combination, most of the would-be settlers sooner or later were forced to give up their attempts to cultivate land better suited for forest production than for farming. The result of the activities of the land speculators in forcing the settlement of nonagricultural lands in these regions has been described as follows by a man thoroughly familiar with local conditions:

> I spent five days around Harrison and I saw abandoned farms in great numbers. I will bet I saw 100 farmhouses boarded up and desolate, and in some of them were the cook stoves, rocking chairs, and a lot of other stuff left behind, for they evidently had no money to cart it away. A whole lot of life's tragedy is written on the Michigan sand barrens. New settlers are going in right along to try the same old experiment of thrashing a living out of the sand and nothingness, and will meet with the same result.

A similar fate met those who invested in summer-resort lots, whether for speculation or for actual residence. A few of these were desirable locations on lake fronts, but the great majority were on desolate sand barrens or in impassable sphagnum swamps. These facts, of course, did not appear in the advertisements. Purchasers were led to believe that they were securing property of unusual attractiveness in a colony that was bound to be one of the most popular summer resorts in the State. In order to get the thing started and to secure the right kind of people prices were reduced at the

outset (to a point where the profit to the speculator would be only a few hundred per cent), or one or two extra lots would be thrown in as a bonus. Not infrequently it happened that when an owner came to look up his lot on the ground he found it in an entirely different location from that which he had been shown on the map.

A particularly pitiful case is that of a laundress from Chicago who bought a lot in a proposed colony that was to be one of the largest and most desirable in the State. As she thought the matter over, however, she became more and more convinced that one lot would not be sufficient to handle all of the business that she undoubtedly would have. So she looked up the promoter to see whether it would still be possible to add another to it. Yes, he would be glad to accommodate her, although the rate at which the property had been selling would necessitate a small advance in price. The laundress, of course, was delighted at her good fortune. Some time later, when she came to look up her property, she found that her original lot, like most of the others in the colony, was in the midst of a sphagnum swamp, and that the second one was a mile or more from it on the other side of a lake! The extent to which the colony actually developed may be judged from the fact that in the spring of 1916, 1,678 lots in the original "park" and its three "additions" were advertised for taxes in the local newspaper.

Statements made by land companies that 44,000 acres of land in the vicinity of certain lakes in Roscommon County changed owners between July 1, 1904, and June 1, 1905, and that up to February, 1908, about 40,000 people had bought lands and lots around Higgins Lake, may be true. Nevertheless, the fact that the population of the entire county in 1910, according to the census, was only 2,274 is sufficient proof that these activities did not result in really developing the region. As a matter of fact, permanent settlers have not been secured. Instead the land has been neglected and laid waste by fire, and little progress has been made in the production of the crop for which it is best suited—timber. Had the State adopted earlier its present policy of reserving for forest purposes all lands which revert to the State for nonpayment of taxes and which are nonagricultural, speculation in these lands would have been largely averted and a good start made toward restoring the forest and eventually building up permanent forest communities.

COMMUNITY DEVELOPMENT INTERRUPTED.

TOO FEW OR TOO MANY IMPROVEMENTS.

The amount of taxes contributed by the lumber industry in well-wooded regions has varied markedly from place to place. Instances are by no means unknown where receipts from taxes in lumber towns have been extraordinarily small in view of the amount of taxable

property in the town. Such property has belonged mainly to the large lumber companies, which were by far the best organized and the most powerful influence in the community. Seldom, under these circumstances, did the township officials impose a heavy tax rate or assess the company property at a sufficiently high value. As a result, the community did not have sufficient funds to pay for the improvements that its resources fully justified. Schools were cheaply built, poorly equipped, and manned with inefficient teachers; roads were badly constructed and their maintenance neglected; proper sanitation was not provided; and water and lighting systems were inadequate or entirely lacking.

On the other hand, instances also are known where towns with very similar conditions have gone to the other extreme in such matters. Schools, roads, and other public works have been constructed that were almost too good for the community. When this has happened, the bills have usually been paid, at least in part, not by increased taxation, but by issuing bonds or notes. Sometimes these have been made payable several years after the date of issue, sometimes on demand. In the latter case, however, it has been likely to happen that because of "financial difficulties" or for other reasons payment of the notes has been postponed from year to year. In either event it has often come about that the obligations have remained outstanding until after the departure of the lumber company, which, having had the benefit of the improvements, left them to be paid for in large part by others.

DEPRECIATION IN PROPERTY VALUES.

In addition to the general demoralization caused by such practices as these, the community is impoverished through the destruction of its most valuable resource. Only too often this has been the means of practically bankrupting communities in regions where land is of little value for anything except forest production. Thriving manufacturing towns have been succeeded by almost deserted villages. Taxable property has been reduced to a minimum. Not only this, but the value of the propery that remains is impaired seriously as a result of the decrease in population. In towns where values have depreciated in this way it is not uncommon to find houses and lots offered for sale for amounts which shortly before, when prosperity abounded, would have been insufficient to pay more than a few months' rent.

Even in regions where the land is well suited for agriculture and eventually should be cleared for cultivation, too rapid removal of the forest may be detrimental because of its effect in reducing taxable values. All farming communities require a certain length of time

to become firmly established, and it is a great assistance if other industries are present to help tide over this preparatory period. In regions where the land is primarily valuable for forest production, the maintenance of the forest property in a productive condition is of course essential for the continued prosperity of the inhabitants.

It has been stated[1] that "there are in Pennsylvania several counties that were once prosperous, because rich in forest, but which are now reduced to an almost bankrupt condition because the timber is gone. The land is too poor and cold to encourage remunerative agriculture." Stewardson Township, in which is located the once busy sawmill town of Cross Fork, is in one of these counties. Assessed real estate values in this township dropped from $896,862 in 1904 to $18,815 in 1914—a decrease of 98 per cent in 10 years.[2] The precarious financial condition of the town is emphasized by the fact that it is still carrying a debt of several thousand dollars in school and road bonds left over from the days of its prosperity. If it had not been for the State, which for some years has been buying up cut-over land in that region, on which it has paid the township annually 2 cents an acre for schools and an equal amount for roads, bankruptcy would have been inevitable. As it happens, the $1,645.60 paid to the township each year by the State has been sufficient to save the situation.

DELINQUENT TAX LANDS.

Still another aspect of the matter is that concerned with delinquent tax lands. In some sections of the country timberland owners have indulged in the practice of allowing their taxes to lapse for several years until they amounted to more than the value of the land, and then buying title from the State again for the nominal sum of $1 an acre or thereabouts. This cheap way of paying taxes has meant, of course, a loss to the community approximately equal to the gain to the individual, in addition to the cost of advertising.

Advertising of such delinquent tax lands has in itself been a heavy expense to the State, though a material profit to the small country newspapers. In Michigan, for example, during the 10 years from 1896 to 1905, more than a million and a half dollars was spent for advertising delinquent tax lands and for extra clerical help in the auditor general's office. In the supplement to the Roscommon Herald-News for March 30, 1916, were published no less than 4,131 descriptions of land and lots in Roscommon County alone on which taxes were delinquent. Three thousand one hundred and seventy-four of these were for village and "resort" lots. The advertisements covered more than four and a half pages and must have been the source of considerable profit to the paper. In all probability the

[1] "Areas of Desolation in Pennsylvania," by J. T. Rothrock, 1915.

[2] See reports of the State Secretary of Internal Affairs in Pennsylvania.

expense incurred by the State in this advertising was almost a complete loss, since it is not likely that more than a very small per cent of the lands advertised, consisting for the most part of sand barrens and swamps, actually were sold.

Such conditions obviously tended to put a premium on fraudulent land dealing. Cut-over lands of little value except for forest production, for example, could be acquired cheaply by the speculator, divided into small lots, the smaller and more numerous the better, and sold as resort lots, fruit farms, or chicken ranches to persons unacquainted with local conditions. Almost any price would be sufficient to net a handsome profit. In addition the register of deeds would receive a tidy sum for recording transfers of title. Before long the purchasers would discover the true character of the land they had bought, taxes would be allowed to lapse, and the local newspapers would benefit substantially from the subsequent advertisement of delinquent tax lands by the State. Some years later the land again might be acquired by speculators and the same procedure repeated. Such transactions have proved highly profitable to speculators, newspapers, and registers of deeds, and equally unprofitable to the individual investor and the general public. At the same time the land has been withheld from the use to which it was best suited.

ABANDONED RAILROADS.

The way in which the forest resources of a region are handled has an important influence on the development and permanence of its transportation facilities. To a very considerable extent the lumber industry has been instrumental in connecting remote regions with the rest of the country. In some parts of the country practically every one of the main trunk lines of to-day started as a logging railroad. Lumbering was the only industry to call people to the region in any considerable numbers, and wood products were the only freight to come out. Where the land was valuable for agriculture, farming to a large extent succeeded lumbering. Often, however, there were no local markets for the farm crops raised on such lands, and it was only because transportation facilities, which had already been developed by the forest resources of the country, were available, that their successful utilization was possible. In other words, the forest by calling the railroads into existence made possible agriculture, which in turn made the railroads permanent.

In regions primarily adapted to forest production, destructive lumbering has a very different ultimate effect on transportation facilities. Here logging railroads in abundance are constructed while the timber is being exploited, and the most remote points are made easy of access. With the removal of the timber, however, the railroads

go too. Business dwindles away to little or nothing, and it is not long before the rails are pulled up and the region left inaccessible and desolate. Hundreds of miles of abandoned railroad grades with rotting ties are to be seen where the history of the lumber industry has taken this course.

In regions where large areas of absolute forest land are interspersed with patches of good agricultural land the same thing is true. Complete removal of the forest means a marked depreciation in the value of the farm land, if not its entire abandonment. With the timber gone, the amount of freight to be handled is reduced to such an extent that it may be unprofitable for the railroad to continue operation; and even if the railroad is maintained, the decreased business to be taken care of necessarily involves poorer service. If the forests were so handled as to insure continuous production, transportation facilities then could be maintained, agriculture developed wherever conditions were favorable, and the fullest possible utilization secured of all the resources of the region.

In this connection it is worth while to note that on land of average quality the production, in weight, of wood material is fully as great as, if not greater than, that of farm crops. Suppose, for example, that an acre of land will produce 1,500 pounds a year, dry weight, of wheat or oats, including both grain and straw. The same land, even if given practically no attention, should produce at least half a cord of wood a year, with approximately the same dry weight. If the forest is properly handled, however, it should be possible to double this yield, giving an advantage of 1,500 pounds in favor of the wood. On poor land, scarcely fitted for agriculture at all, the comparison undoubtedly would be even more favorable to the wood.

A LOWER STANDARD OF POPULATION.

One of the unfortunate results of the failure of lumber operations, as usually conducted, to build up well-organized, stable communities is seen both in the character of the population dependent on it and in that left on the cut-over lands after the industry has moved on.

The average lumberjack is a hardy, picturesque figure; but, moving from place to place and from region to region as the timber is cut out, he necessarily leads a roving, restless existence. A permanent home and a normal family life are impossible. In western Washington, for example, only 14 per cent of the employees in logging camps are married.[1] For these few the difficulties in the way of leading an orderly life, of maintaining a normal home, and of giving their children even a fair education are almost insuperable. A typical lumber

[1] "Need of Working Plans on National Forests and the Policies Which Should Be Embodied in Them," by B. P. Kirkland, in the Proceedings of the Society of American Foresters, Vol. X, No. 4.

camp, with its prevailingly rough, masculine population, its cheap buildings, and its frequent lack of sanitation, is by no means the best place in which to rear a family.

Nor are conditions greatly superior in the rude sawmill towns which flourish for a few years while the timber is being cut, only to fade away with its disappearance. Here there may be more of the elementary conveniences and decencies of life, but there is the same atmosphere of unrest, of instability, and even of immorality. The life of such towns is likely to be abnormal and their prosperity only temporary. Permanent homes, strong characters, and good citizens can not be built on so unstable a foundation.

As to the after effects of destructive lumbering, the scanty population left in the cut-over nonagricultural regions has little chance for development. Deserted villages and the barren lands by which they are surrounded not only offer little opportunity for employment but also exercise a depressing influence on the settler and his family. The men with most ambition, enterprise, and energy, the people who really accomplish things, move on to new fields, where they are not faced by the prospect of certain stagnation. It is usually the weaker ones who are left behind. Particularly serious is the effect of such deterioration on the coming generation.

Destructive lumbering also has its effect on the well-being of the city dweller by destroying his vacation ground. For the sportsman, the nature lover, and the recreationist, the conversion of a magnificent virgin forest into an ugly, stump-covered, and fire-blackened waste represents a very real loss. Not only have the trees themselves gone, but with them the flowers and ferns, the mosses and lichens, the birds and the deer, all that gave the woods their peculiar charm. Even springs may have gone dry and brooks become turbid and unlovely. From the mountains and the valleys, the streams and the lakes, man draws his inspiration and his strength; and to all of these the forest adds the final touch. Who cares to go fishing on a river or boating on a lake that has no trees? Without them something vital is lacking. A country once rich in forests can not allow them to be converted into unsightly wastes without paying a penalty, however intangible, in weakening the character of its population.

SUGGESTIONS FOR A RATIONAL TIMBERLAND POLICY.

NEED FOR A DIFFERENT SYSTEM OF HANDLING FOREST LANDS.

That, from a social standpoint, the system under which our forest resources have been handled in the past has not worked well is fairly clear. Sufficient lumber has been supplied to meet the needs of the country as a whole, but this has been done in such a way as to cause much waste and in certain localities to bring about local shortages of

timber. Forest regions have been well developed, provided with excellent transportation facilities, and made prosperous for a few years, only to be stripped of their timber and left desolate, poverty-stricken, and depopulated. Speculation and fraudulent land dealing have been practiced extensively. Permanent homes and normal family life have been the exception rather than the rule, and the standard of citizenship has been lowered.

For all these results the economic system adopted by the country, rather than the individual timber owner or operator, is of course primarily responsible. The individual was not only allowed, but actually encouraged, to follow whatever course would best advance his own interests; and if in doing so he brought about certain social and economic effects that were detrimental to the welfare of the community as a whole, the public has only itself to blame for the result.

The private owner very naturally did not feel that it was incumbent upon him to provide for the needs of future generations, nor did the adoption of such measures as would place the forest on a permanent producing basis appeal to him as an attractive investment. As a matter of fact, probably the great majority of private owners, and indeed of the general public, hardly thought of such matters at all, or if they did, it was generally with the easy feeling that the future would take care of itself. How it has done so in a number of important respects has been pointed out in the preceding pages.

It has often been argued that these results, regrettable as they are, could not have been avoided, because the country could have been developed at a satisfactory rate only by the individualistic "let-alone" system that was actually adopted. This statement is open to considerable question; but even if it is true, that is no reason why the system should still be continued. Economic conditions have changed completely within the last century, and, more important still, the general public now has an entirely different attitude toward problems that affect the community welfare. The tendency of the times is clearly to emphasize the social rather than the purely individualistic point of view. A system that may have been suited to the needs of the country a century or even a few decades ago may be distinctly unsuited to them now. This is very evidently the case so far as the "let-alone" system of handling our forest lands is concerned. From a community standpoint that system obviously has broken down. The problem now is to replace it by one that so far as possible will retain the good and eliminate the evil of the old system. Fundamentally this involves merely substituting the practice of forestry for timber "mining," but this in turn involves a number of different steps that deserve some further consideration.

LAND CLASSIFICATION.

The first step is to determine what lands should be devoted to forest production. As a basis for this, it would be extremely desirable to have a thorough classification of lands throughout the country made by competent public authorities. This classification should aim to point out the use to which the land is best adapted. Obviously it is an economic waste to grow trees on the best agricultural lands or to attempt to farm the poorest forest lands—so obvious, in fact, that the mistake is seldom made. But between these two extremes are all sorts of cases in which the economic waste of putting the land to the wrong use is less obvious but none the less real. On such lands as these a classification is particularly needed.

A great deal has already been accomplished in the way of soil and geological surveys. These are valuable so far as they go, but they do not go far enough. What is needed is not only information regarding the origin, composition, and depth of the soil, and the topography and climate of the region, but an interpretation of these factors in terms of their usefulness to man. The best present use of the land, furthermore, depends not only on the physical factors of soil and climate, but also on such economic factors as the availability and quality of agricultural lands elsewhere, the market for agricultural crops, transportation facilities, and the like. In the last analysis the problem boils down to such specific questions as these: Should this piece of land under present economic conditions be devoted to oak or to alfalfa? Should that piece be used for growing white pine or corn?

Such a classification as this, which of course should be conducted by representatives of the State or Nation, can not help involving many difficulties. Years ago it probably would have been impracticable; even to-day mistakes will be made. But that is no reason why the work should not be undertaken as promptly and pushed as rapidly as possible. A small start has already been made in this direction. In the National Forests, for example, no land is opened for entry under the homestead laws until it has been examined carefully to determine whether it really has agricultural possibilities. In the last few years surveys have been made of entire Forests, and on the basis of these surveys the land has been classified permanently as primarily valuable for agricultural or for forest purposes. In some of the State forest reserves agricultural settlement is not allowed at all or only after a thorough examination to determine the value of the particular tract of land for this purpose.

Many areas in every region can be classified almost at once as either agricultural (including grazing) or forest land. Many others will have to be classified as intermediate, by which is meant that they

may be devoted to either purpose as local conditions and the economic development of the region make one or the other more profitable. Undoubtedly many of these intermediate lands, perhaps most of them, for the present can be used most advantageously for the production of timber crops. A great deal of land that may properly be devoted to forest production to-day in all probability can be used more profitably for agriculture fifty years hence. Millions of acres of cut-over and timbered land in the Lake States, the Southern States, and the Pacific Northwest are of this character. An impartial land classification would recognize this fact and would designate them as primarily valuable, under present conditions, for forest purposes. This designation might well be changed in subsequent classifications, which would obviously be necessary from time to time in the case of intermediate and doubtful lands.

In making such a classification still another factor should be taken into account. This is the amount of land that should be retained in forest in order to prevent erosion and irregular run-off and to supply the country's needs for timber. Experience abroad has shown that countries with considerable hilly and mountainous land are likely to suffer from erosion and from alternating floods and low water when the forest is reduced to 20 per cent or less of the total area. Experience has also shown that approximately 100 acres of forest land per 100 inhabitants are necessary for a country to be self-sustaining as regards its wood supply, even with a much smaller per capita consumption of wood than exists in the United States. Both these facts can well prove useful to the Nation and to individual States as a guide in determining the extent to which they should allow their forest areas to be reduced.

After a land classification has once been made, the next step is to see that the land is actually used for the purpose to which it is best adapted. At first sight it might appear to be sufficient to publish the result of the classification and then to leave the matter entirely to the private owner, since he naturally would be inclined to devote the land to that use which would bring him the highest returns. It is doubtful, however, whether this is a safe assumption. Taking human nature as it is, it seems more likely that ignorance and prejudice would still lead in many cases to the wrong use of land, and, worse still, that a desire for speculative gains would frequently lead to its nonuse. State supervision of land-settlement enterprises, on the general principle of the "blue-sky laws" now applied in many States to the operations of corporations seeking to sell securities, probably would go far toward protecting the innocent but ignorant settler or investor; and a system of taxation that would absorb at least the greater part of the rental value that the land

F–23146A

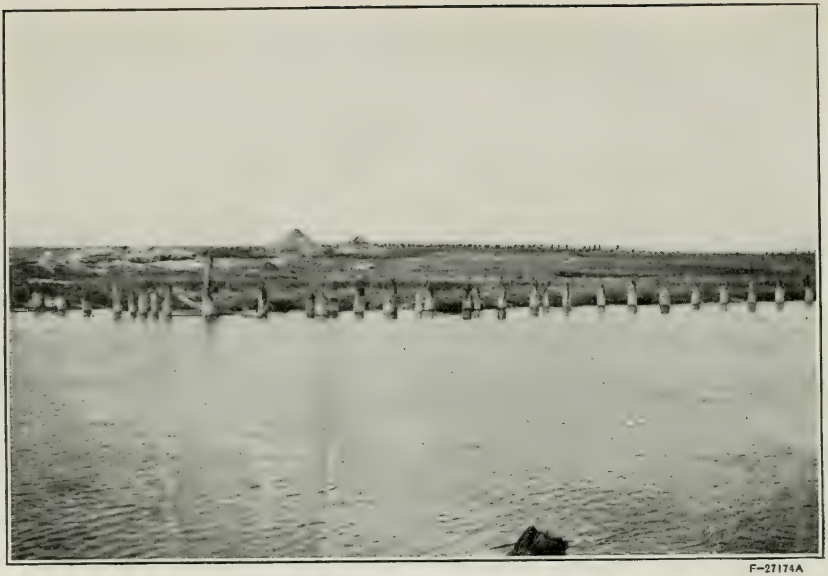
FIG. 1.—ALL THAT IS LEFT OF THE ONCE PROSPEROUS TOWN OF CROSS FORK, PA.

With the departure of the sawmill its population shrank from 2,000 to 61, and the assessed value of its real estate from $896,862 to $18,815.

F–27171A

FIG. 2.—APPROXIMATELY HALF OF THE HOUSES IN THIS MICHIGAN TOWN ARE NOW DESERTED.

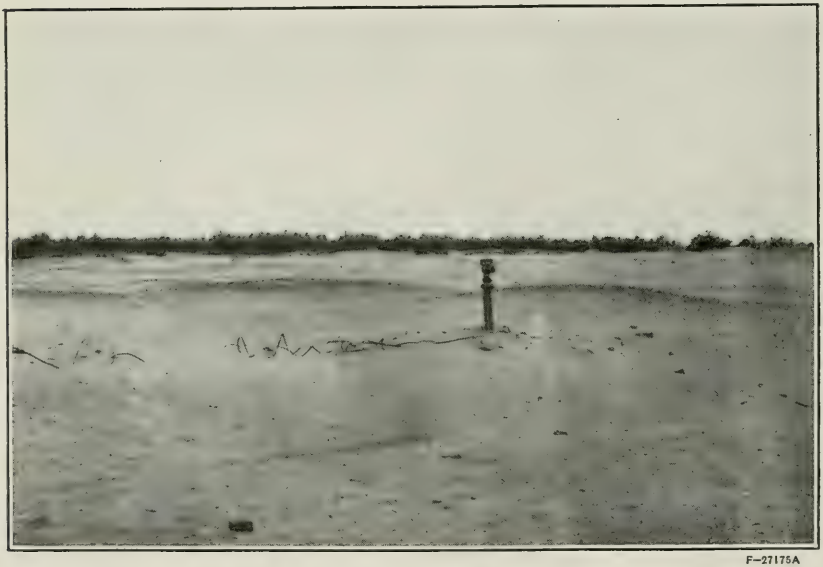
The sawmill, on which the prosperity of the town depended, ceased operations about five years ago.



F-27174A

FIG. 1.—DESOLATION ON THE AU SABLE RIVER, MICH.

The sawdust heaps in the background mark the ruins of a former sawmill, while the rotting piles in the foreground are all that is left of the extensive wharves that formerly lined the river and lake front.



F-27175A

FIG. 2.—THESE DRIFTING SAND DUNES WERE ONCE A PART OF A PROSPEROUS MICHIGAN SAWMILL TOWN.

In the foreground note the hydrant, a part of the excellent water system formerly maintained by the town.

would have if used for the purpose approved by the classification would undoubtedly help to encourage its use for that purpose and to discourage speculation.

CONTINUOUS FOREST PRODUCTION.

When the lands that are to be devoted to the production of wood have been definitely marked off, preferably by some system of expert public classification, or, if that is not yet possible, by the judgment of the individual owner, destructive lumbering must be replaced by forest management. The first step in this direction is to insure adequate fire protection both of standing timber and cut-over lands. During recent years a great deal has been accomplished along this line through the combined efforts of the National and State Governments, some 40 fire protective associations, and many individual owners. With an average annual loss of at least $10,000,000 from forest fires, however, much still remains to be done. Adequate fire protection is absolutely essential for the practice of forestry.

A second step is to keep the forest lands of the country continuously productive. A policy that allows immense areas of potentially productive forest lands to lie idle is not only short-sighted but exceedingly wasteful. If the 100 million acres of logged-off and burned-over forest lands on which, according to the estimate of the National Conservation Commission in 1908, little or no growth is now taking place, are capable of producing an annual return of $1 an acre, by allowing them to lie idle we are practically throwing away each year $100,000,000. Probably an equal amount is being lost each year through failure to secure the greatest possible growth on the remaining forest lands of the country. Even a nation so richly blessed with natural resources as the United States can ill afford such prodigality.

To reforest by artificial means the devastated areas is a task of enormous magnitude and in its entirety of almost prohibitive expense. Even if planting can be done successfully at an average cost of from $5 to $10 per acre, it will involve an outlay of several hundred million dollars. From this outlay, moreover, no return can be received for many decades. If compound interest is charged against it, the original investment will have doubled over and over again before the crop can be harvested. This means that there are very definite limits to which artificial reforestation can be conducted profitably, particularly by the private owner. Forestry that starts with the bare land is at best an expensive undertaking, and from a purely financial standpoint has very distinct limitations. If forestry is not to be practiced until the land has been denuded, we shall have but little of it for many years. Planting will be necessary in some cases, but it will not solve the whole problem or any great part of it.

A much better way to keep forest land productive is to start before the trees are removed. Steps should be taken to put the forest in better condition, and in this way to increase its productive capacity. Above all, however, every precaution should be taken to see that when the original stand is removed, adequate provision is made for a new crop to take its place. Forestry that starts while the trees are still on the ground is neither so difficult nor so costly a business as one that involves reclamation of denuded land. Ordinarily the new crop can be started at little expense by natural reproduction from the trees in the original stand. Even in those comparatively rare cases where planting must be resorted to, the burden is not so great as in the planting of land that has been denuded and abandoned, since the land is not so overgrown by weeds and brush and since only partial planting is usually necessary.

Starting the practice of silviculture before the land is denuded is also a prerequisite to the third step necessary to replace timber "mining" by forestry. This step consists in regulating the cutting of the timber on any given unit so that the same amount of material can be removed year after year; or, in other words, of utilizing the forest only as fast as it grows. It is perfectly possible for any capable forester to do this. The fact that timber is a crop that requires many years to mature is no reason why an approximately equal annual yield should not be obtained from forest land as well as from farm land. The only difference is that in the case of the timber the crop can not be removed from the same spot every year. Instead, the unit under forest management must be sufficiently large so that it can be divided into the same number of parts as there are years in the period required for the wood crop to reach maturity. One of these parts can then be cut each year, and a new forest started on it and allowed to grow until all the other parts have been cut, when it will again be ready for cutting. This process, of course, can be kept up indefinitely, and a permanent forest community established for the utilization of the annual cut.

Where the forest is composed of trees of different ages, so that clear cutting of any given area is not practicable, the general principles for securing the same yield year after year still hold, although their practical application is not so simple. In this case, scattered trees are selected for cutting. This means that the cutting must cover a larger area each year and that partial cuttings on the same area must be made more often than where the trees are all of approximately the same age.

The size of the area that is necessary to provide a sufficient annual cut of timber to be profitable will naturally vary more or less in different parts of the country, according to the rate of growth, market con-

ditions, transportation facilities, and similar factors. Many forest regions, however, now have enough timber and are sufficiently developed economically so that a sustained annual yield large enough to warrant lumbering operations can be obtained within easy working distance of a permanent center; and this will become more and more true, both for these and other regions, as settlement and development of the country proceed. Even where for one reason or another it may not be feasible to continue lumbering operations indefinitely from the same center, it is entirely possible to apply the same general principle. The only difference is that there would be temporary subcenters, which would be moved from place to place at infrequent intervals, but which would nevertheless support a permanent population and would always remain in the same general region. The essential point is to maintain a balance between the annual cut and the annual growth on any given unit, which preferably should be as small as economic conditions make practicable, and to have a definite and comprehensive plan for the utilization of this cut.

If in the actual handling of our forest resources this ideal has been conspicuous by its absence, the blame may be laid upon economic conditions that have hitherto prevailed. The system of unregulated private ownership, the vast bodies of mature timber ready for cutting, the pressure of unrestricted competition, and the fact that lumbering has been a pioneer industry, which operated chiefly in regions of comparatively poor economic development, all conspired to make it unprofitable, and therefore impracticable, to handle the forests on a permanent basis. The time now has come, however, when this is no longer true. Conditions to-day are radically different in nearly every respect from those which heretofore have imparted to the industry its temporary character. It is now possible to practice the kind of forest management that will make the industry permanent and self-supporting.

Handling the forest lands of the country on the basis of sustained yield by no means necessarily involves decreased returns from the business. On the contrary, it may prove even more profitable. When timber "mining" is practiced the only profit that can ordinarily accrue to the timber owner is through a speculative rise in the value of his stumpage. This increase in value must be sufficient to meet not only the usual carrying charges but also a depletion charge for the forest capital destroyed. Assuming that the present stand of timber under private ownership is 2,200 billion board feet and that at the present rate of cutting all this will be removed in 55 years, the depletion charge against the industry is nearly 2 per cent. Until recently stumpage values have risen rapidly enough to met both this depletion

charge and carrying charges, and at the same time to yield a satisfactory return on the investment. With stumpage prices at their present level, however, and rising only comparatively slowly, it is doubtful whether this will continue to be true—certainly not to the extent that it has been in the past.

When forestry is practiced, however, the timber owner not only profits from any rise in stumpage value that may occur, but by keeping his forest continuously productive he avoids any depletion charge and provides a young, growing stand to meet carrying charges and to yield a return on the investment. To illustrate by a single example, an overmature stand of Douglas fir may produce a net growth of from 0 to 50, or at most 100, board feet per acre per year, while a young, well-stocked stand of the same species may yield approximately 800 board feet per acre per year up to 100 years of age. This means that on every acre that is cut over and reproduced to young growth, the annual wood production is at least eight times as great as it was before. As the cutting proceeds the amount of young growth increases steadily, until finally the virgin timber is replaced entirely by growing trees of all ages from one year to maturity. These have an annual productive capacity 700 per cent greater than that of the original stand and are therefore more capable of paying their own way and of yielding a permanent return on the investment. The establishment of the new crop will, of course, ordinarily cost something; but if this is done by means of natural reproduction at the time the original stand is removed, the expense need not be great. The time has now come when the practice of forestry will benefit not only the community, but also the industry itself.

STABILITY OF POLICY.

Stability of policy is vital to the practice of forestry. The production of timber is a long-time process, and as such demands foresight and continuity of management. Carefully prepared plans extending many decades into the future must be worked out in order to make it possible to secure the same yield year after year from any given forest. Plans for different forests will naturally vary more or less, according to the character of the forest, economic conditions, and the wishes of the owners, but all must have the common characteristic of assuming that the general policy on which they are based will be adhered to. Natural causes, such as fire, wind, insects, and fungi, will ordinarily interfere seriously enough with the carrying out of any plan without subjecting it to the additional handicap of a vacillating policy. From the standpoint of the technical forester a constantly shifting policy is almost as fatal to the practice of forestry as no policy at all.

From a financial standpoint also, stability of policy is necessary in order to make timber production a profitable business. Like other long-time investments, forestry can not be expected to yield a high rate of interest. In most parts of the country it will not return a profit greater than 5 per cent. This points directly to the necessity for cheap money, which is to be had only in businesses firmly established on a sound and stable foundation. Up to this time the lumber industry has subsisted chiefly on speculative capital, which has seldom cost less than 6 per cent and usually more. Whether this was necessary in the early development of the industry is perhaps debatable, but it is also immaterial so far as present conditions are concerned. The important point is that a stage has now been reached where the industry can not continue to yield the speculative returns that it has in the past. Carrying charges in most parts of the country have now become so heavy that they are mounting up as fast or faster than stumpage is increasing in value. In other words, timber holding, pure and simple, is becoming unremunerative and must be supplemented by timber growing. But timber growing, from the very nature of the product, will not pay a high rate of interest, and the only way in which money can be obtained at low rates is by putting the business on a stable, nonspeculative basis.

There is no good reason why forestry, the business of continuous timber production, should not be put on such a basis. We already know enough about our forest trees to keep the land productive and to make the annual cut approximately equal to the annual growth. Stumpage prices are now sufficiently high to yield a moderate return if forest management is started before the trees are cut off. European experience has proved that with adequate care and protection the business of timber growing is one of the safest and most conservative forms of investment.

How to secure a clear-cut and stable forest policy is one of the chief problems to be solved in placing the management of our forests on a sound and permanent basis. Taking the country as a whole, private ownership has so far failed to do this. It is true that in many parts of the Northeast the prevailing uneven-aged forest, limited fire hazard, and favorable markets have resulted in the practice of a crude sort of forestry. Because of the character of the forest, clear cutting has been the exception rather than the rule, and forest production has been more nearly continuous here than in other parts of the country. But these good effects, like the bad effects elsewhere, have been mainly accidental and not the result of any far-sighted policy. With comparatively few exceptions private ownership so far has been content to let the future take care of itself. Nevertheless, it is possible that under the changed conditions that now exist many private owners may find it to their advantage to adopt a stable

policy, which would enable them to really practice forestry. Every effort should be made to bring about such a desirable result, since it appears certain that for many years at least the bulk of forest lands of the country will remain in private hands.

If the adoption of a stable forest policy is to become at all general among private owners, it will involve a radical change in the character of much of the capital now invested in timberlands. The business of growing timber under forestry principles will not attract speculative capital. Timber stocks and bonds, however, if properly secured by land and timber under forest management, may prove a safe and profitable investment for saving banks, insurance companies, and individuals who are looking for security rather than for high returns. Any change necessary to make such investments available must necessarily involve the elimination of the speculative element in timber holding. Probably this will take place gradually and will be accompanied by more or less liquidation, according to market conditions during the transition period. It has also been suggested that some widespread organization among timber owners, under restrictions to safeguard the public interests, would go far toward bringing about the desired stability.

PUBLIC CONTROL AND OWNERSHIP.

Increased public participation in the management of timberlands will be another powerful factor in bringing about the practice of forestry and in doing away with the evils that so far have accompanied uncontrolled private ownership. For one thing, it seems probable that in time the United States will follow the lead of many other countries in exercising public control over privately owned "protection forests," that is, mountain forests which help to protect the land from erosion and to insure uniform stream flow. This function of the forest is so important to the welfare of the entire community that the control of such areas has generally been looked upon as a proper function of the Government. Control is usually exercised by requiring absolute fire protection and by regulating the cutting of the forest in such a way as to maintain the desired protection.

Public control may, in the not very distant future, also extend to many private forests which are managed primarily for timber production and in which the protective feature is of little or no importance. This control may affect both the technical and the business end of forest administration. If forest owners should be permitted to organize on any considerable scale as a means of assisting them to practice forestry, it is certain that the public would want a deciding voice in matters affecting its own interests. It would, for example, wish to supervise the financing, and particularly to exercise absolute control over any steps looking toward arbitrary limitation of cut or

fixation of prices. Whether this would involve public control over certain technical aspects of forest production would depend altogether on the need for such action. If private owners, either individually or collectively, prove incapable of practicing forestry, the public, for its own protection, must take a hand in the business. This would in all probability involve the participation of technical foresters, employed by the public, in the preparation of detailed forest working plans covering fire protection, methods of cutting, amount of material to be removed each year, and similar matters.

Public influence in the handling of the forest lands of the country will also make itself felt through the extension of public ownership. This is a logical and inevitable development. The public, whether represented by the Federal or State Governments, is in many respects in a much better position to practice forestry than the average individual or corporation. It does not have to secure such a high rate of interest on its investment, it is not under the same pressure to secure the greatest possible returns immediately, it is not affected by speculation, and, above all, it is concerned fully as much with the future as with the present. The State exists primarily for the purpose of promoting the development and increasing the well-being of its entire population, both present and future. One of its main functions is to provide for its own prosperous perpetuity. Forestry, which necessarily looks to the future as well as to the present, is a peculiarly appropriate function to be assumed by the Government.

Considerable advance has already been made in this direction. In 1872, when the Yellowstone Park was established, the first step was taken to retain public control over even a small portion of the forested area of the country. The most important advance in this direction came in 1891, when Congress authorized the President to set aside forest reserves—now called National Forests—from the unappropriated public domain. Since then a steadily increasing amount of forest land has been brought under management for the benefit of the public. To-day some 136,000,000 acres in the United States proper are held by the Federal Government as National Forests, and some 3½ million acres by 13 different States as State forests. With four-fifths of the timberland of the country still under private ownership, however, there is no danger of moving in this direction too rapidly. On the contrary, every effort should be made to increase both Federal and State holdings whenever and wherever possible.

Above all, title should be retained to all forest land now publicly owned. New York, in 1883, passed legislation prohibiting the further sale of land acquired through nonpayment of taxes. Since 1905 Pennsylvania has ceased to sell its public land for 26⅔ cents an

acre, while at the same time buying back for forest-reserve purposes similar land, stripped of its timber, for $3 or $4 an acre. Michigan no longer disposes of its delinquent-tax lands for $1 an acre, but holds such lands, when nonagricultural in character, for forest reserves. Similar action by all States would go far toward forming a substantial nucleus around which an adequate system of State forests could eventually be built up. The Federal Government should retain the forest lands that it already holds and should add to these, as opportunity permits, both by purchase and by exchange. The objection that such a policy will decrease local revenues by withdrawing lands from taxation can be readily met in two ways. The State can construct and maintain its fair share of community improvements, or it can contribute to the local communities on the basis of the acreage or value of such lands or the receipts from them; or both methods can be used, as is now done in the case of the National Forests.

As public ownership gradually increases and a larger and larger proportion of the forest lands of the country are managed for a sustained annual yield, this policy will undoubtedly have a marked influence in bringing about a more conservative and more permanent handling of forest lands still held by private owners and particularly by big corporations.

COMMUNITY BENEFITS.

The practice of forestry on the forest lands of the country will obviously benefit the community in general by doing away with the harmful social and economic effects of timber "mining." When continuous forest production is secured on lands classified by experts as primarily valuable for that purpose, lumbering will no longer be a roving industry, leaving desolation and abandoned towns in its wake. Instead there will be a permanent population engaged in the care and utilization of the forest and its products. This forest community also will make profitable the cultivation of whatever farming land there is in the region and so help to support a permanent agricultural population.

Forestry thus will tend to check the present alarming drift from the country to the city, and will contribute materially toward building up a larger rural population. By furnishing opportunities for employment where none now exist, it will do its share to assist in solving the vexed problem of the unemployed. In Australia the undertaking of State forestry has in fact been strongly advocated as a considerable remedy for rural depopulation, unemployment, and pauperism. A well-managed forest requires much labor in protecting it from fire and other injuries, in nursery and planting work, in making thinnings, in constructing roads, trails, bridges, telephones, and other permanent improvements, and in cutting the timber and other products and getting them to the market, to say nothing of the

F-23778A

FIG. 1.—A BIT OF VIRGIN NORWAY PINE FOREST ON THE SHORE OF TROUT LAKE, WIS.

Thousands of acres formerly covered with stands of this sort are now desolate as a result of destructive lumbering and fires.

F-23773A

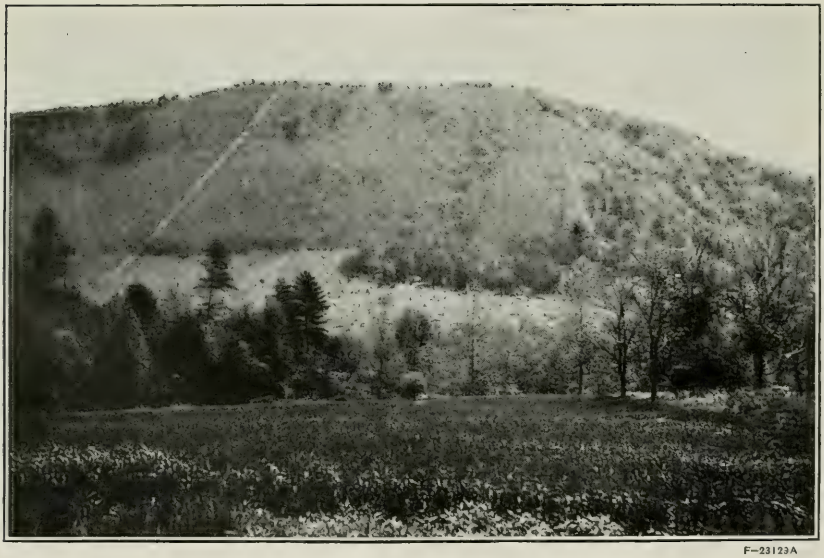
FIG. 2.—PLANTATION MADE BY THE STATE OF WISCONSIN ON CUT-OVER LAND ON THE OUTSKIRTS OF THE TOWN OF STAR LAKE.

The building on the right is a State forest ranger station.

F—27158A

FIG. 1.—POOR FARM LAND MAY BE GOOD FOREST LAND.

This area in Roscommon County, Mich., formerly covered with a good stand of pine, was clear cut and an attempt made to farm it. It was soon abandoned, however, and reverted to the State for taxes. It is in the heart of one of the State Forest Reserves and is now being used for forest production, for which it is preeminently suited.



F—23123A

FIG. 2.—A CUT-OVER AREA, STRIPPED OF ITS TIMBER, BEING REFORESTED BY THE PENNSYLVANIA DEPARTMENT OF FORESTRY.

Two fire lines are shown in the picture, one on each side of the plantation.

subsequent manufacture of such products. In England and Australia it is estimated that forests give ten times as much average employment as sheep farms of the same size, without taking into account the population absorbed in attendant industries, which in many cases is said to amount to treble this figure.

The population supported by stable forest industries will also be of a higher type than the wandering, pioneer character of the lumber industry hitherto has made possible. Permanent homes and a normal family life, coupled with increased social and educational opportunities, will develop the more civilized virtues without destroying the courage, vigor, alertness, and physical prowess that always have been characteristic of the typical woodsman. The strength of the Nation comes primarily from the soil, and the welfare of the entire country is promoted by any industry that affords permanent employment for a large rural population of high type.

In addition to the stable communities of permanent inhabitants which the practice of forestry will make possible, the transient population that will be attracted to the region for sport or recreation must not be overlooked. Such visitors not only will gain health and inspiration from their visits but will add materially to the prosperity of the local communities. Hundreds of thousands of dollars are now spent every year by hunters, fishermen, tourists, and others in search of recreation. The scenic attractions of a region are a very substantial asset to the transportation companies, owners of hotels and other summer resorts, guides, and local settlers. They help materially to increase business and to promote the development of the community in general.

The maintenance of forest lands in a continuously productive condition will further benefit the individual and the community by assuring a local supply of wood. This will do away with the local shortages of timber which are now becoming pronounced in many regions once well forested and will thus obviate the necessity of paying high freight charges and to a certain extent middlemen's charges on material imported from considerable distances. The establishment of permanent settlements will also stabilize transportation facilities, which in turn will contribute to the development of the entire region. And finally the use of the land for the purpose to which it is best suited, under such public supervision as may be necessary, will to a large extent do away with the speculation and fraud which hitherto have so often accompanied forest destruction.

In a word, the practice of forestry on forests lands throughout the country would mean the building up of permanent, prosperous, forest communities which would contribute immeasurably to the development and welfare of the Nation.

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